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ABSTRACT

This study is a preliminary analysis of the undergraduate and graduate Schools of Business Administration on the Berkeley campus of the University of California. The purpose of this investigation is to address some of the major policy questions facing these schools and to provide a basic framework for comparable analyses in other institutions. The paper begins by presenting the formal organization of the Schools and identifying who makes what decisions. Then it proceeds to discuss some concepts of decision theory which regard an organization from the points of view of the decision makers. It then examines several decision problems in an attempt to identify the decision makers' information needs. Any research activities as well as faculty promotion processes are explicitly excluded. The last chapter attempts to look at the Schools from the point of view of the Dean. Thus, some of the interdependencies that exist between the degree programs and the consequences of some policy questions of current interest are examined. (Author)

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AN ANALYSIS OF THE SCHOOLS OF BUSINESS ADMINISTRATION AT THE UNIVERSITY OF CALIFORNIA, BERKELEY

Luis Llubia

Paper P-18

December 1970

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PREFACE

This is one of a continuing series of reports of the Ford Foundation sponsored Research Program in University Administration at the University of California, Berkeley. The guiding purpose of this Program is to undertake quantitative research which will assist university administrators and other individuals seriously concerned with the management of university systems both to understand the basic functions of their complex systems and to utilize effectively the tools of modern management in the allocation of educational resources.

This study is a preliminary analysis of the Undergraduate and Graduate Business Schools on the Berkeley Campus of the University of California. The purpose of this investigation is to address some of the major policy questions facing these schools and to provide a basic framework for comparable analyses in other institutions.

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I. INTRODUCTION

The present study explores the possibilities of carrying out an analysis of the Berkeley Business Schools. We begin by presenting the formal organization of the Schools and identifying who makes what decisions. Then we proceed to discuss some concepts of decision theory which regard an organization from the points of view of the decision makers. With this idea in mind, we examine several decision problems in an attempt to identify the decision makers' information needs. The selection of decision problems is not arbitrary; in fact, we try to determine how well the Schools meet the students' academic needs. We explicitly exclude any research activities as well as faculty promotion processes. However, in the last chapter, we attempt to look at the Schools from the point of view of the Dean. Thus, we examine the interdependencies that exist between the degree programs and the consequences of some policy questions of current interest.

Throughout the study an effort is made to evaluate relevant costs and benefits. Unfortunately, the lack of data and sometimes the vagueness of the processes involved afford only rough estimates of these costs and benefits. It is obvious that better analysis is needed. In the concluding chapter I suggest directions in which further research could be fruitful, because, "I continue to have personal faith that better analysis can assist in the making of better decisions."[1]

---

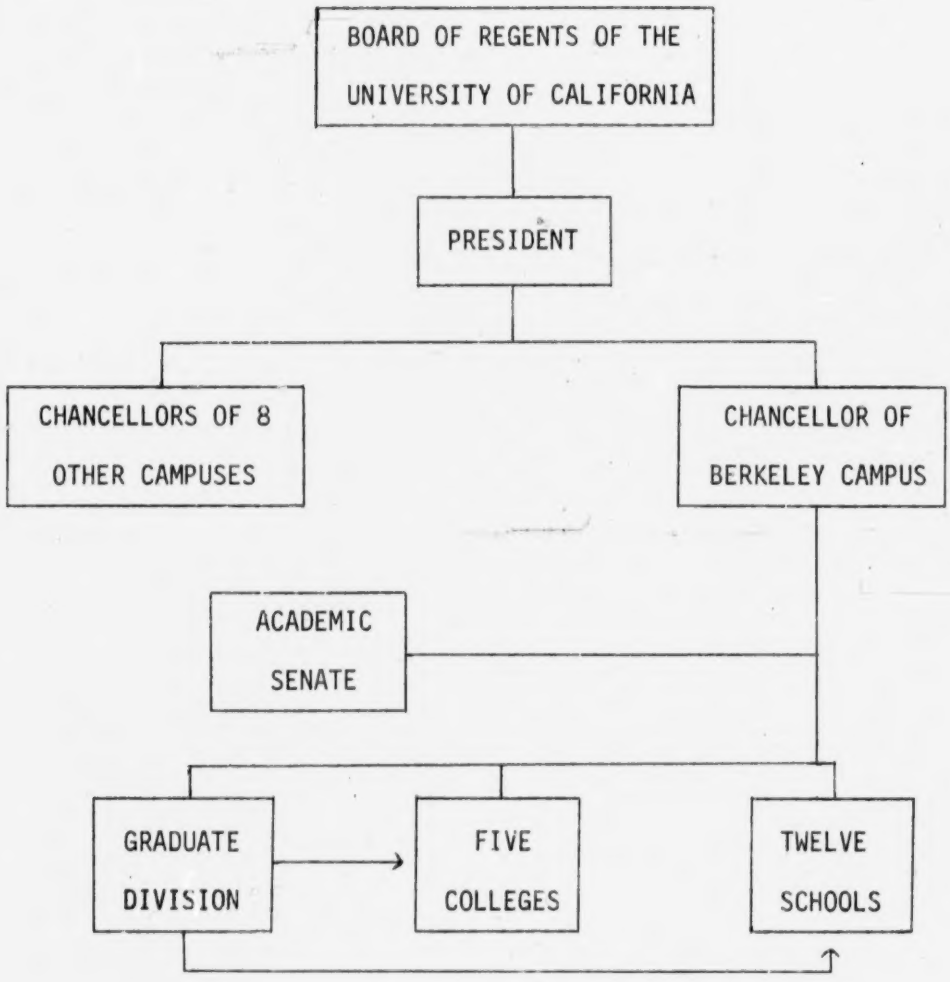
[1] F. E. Balderston, "Planning and Analysis in the University of California," paper presented before the OECD conference of April, 1969, in Paris, France.

II. THE FORMAL ORGANIZATION OF THE BUSINESS SCHOOLS

An extremely simplified version of the structure of the University of California is given in Exhibit 1. The State of California entrusts the government of the University to a Board of Regents which designates a President to be the executive head of the organization. In turn, each of the nine campuses has a chancellor as chief administrative officer who is responsible for its operations. The Berkeley campus has an Academic Senate consisting of the regular faculty and some administrative officers, which participates in the administration of academic matters such as the requirements for student admissions and the granting of degrees. For instructional purposes, the campus is divided into seventeen major divisions: five colleges and twelve schools. Among the schools are the School of Business Administration and the Graduate School of Business Administration. In addition, the Graduate Division operates under the regulations established by the Graduate Council of the Berkeley Division, a committee of the Academic Senate. In turn, the Graduate Division establishes policy in matters concerning graduate study which applies uniformly to all divisions.

The organizational chart of the Schools is depicted in Exhibit 2. It should not be taken as an exact representation of the lines of authority, but rather as a rough approximation which is useful to structure the analysis.

The Schools of Business Administration constitute one single academic department headed by the Dean and Chairman of the Department. This differs, for instance, from the College of Letters and Science, where the Dean heads forty-four department chairmen. This arrangement has proven to be useful



COLLEGES

Agricultural Sciences
Chemistry
Engineering
Environmental Design
Letters and Science

SCHOOLS

Business Administration
Graduate School of Business Ad.
Criminology
Education
Forestry and Conservation
Journalism, Graduate
Law
Librarianship
Optometry
Public Affairs, Graduate
Public Health
Social Welfare

EXHIBIT 1

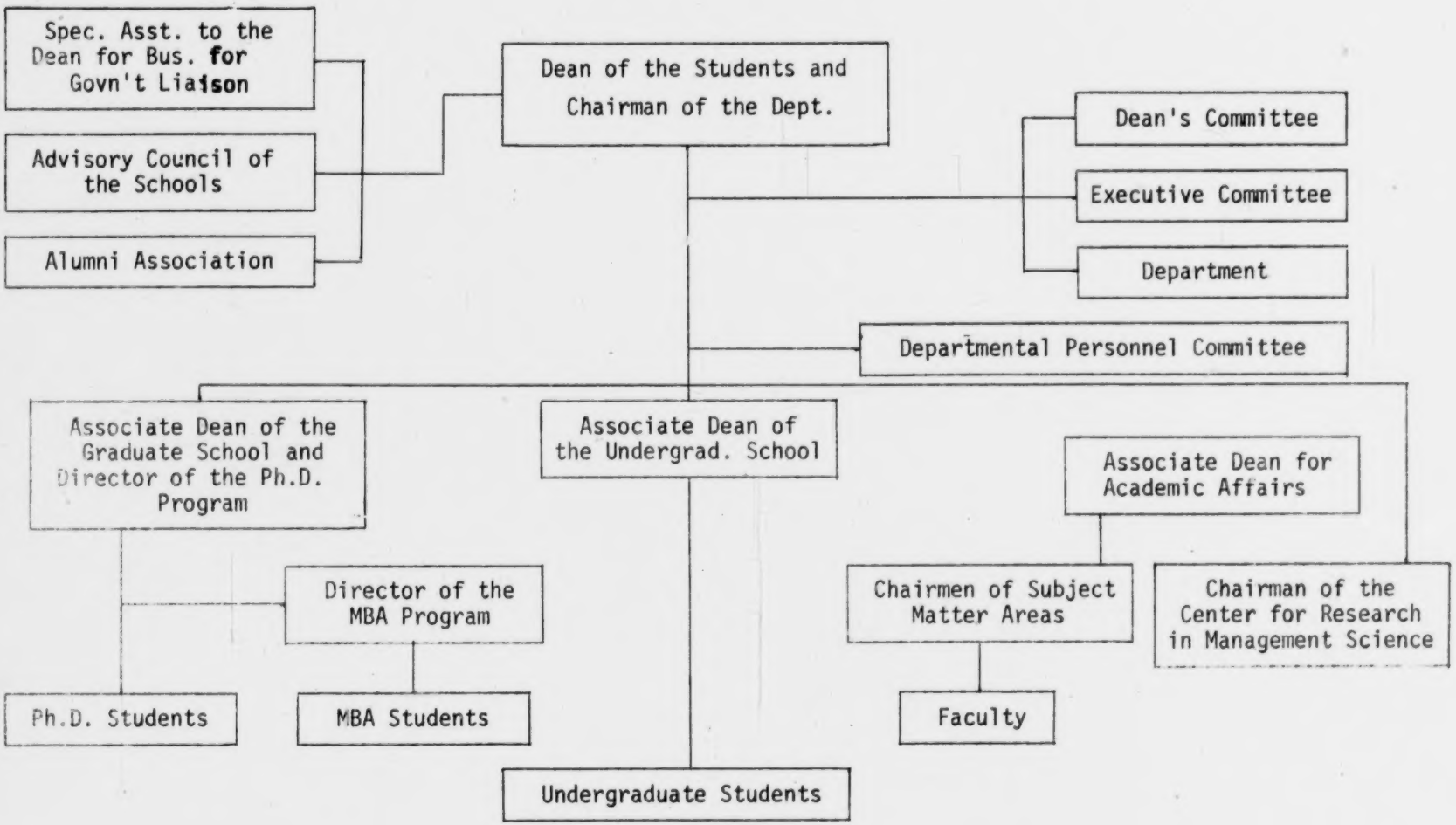

Spec. Asst. to the Dean for Bus. for Govn't Liaison
Advisory Council of the Schools
Alumni Association
Dean of the Students and Chairman of the Dept.
Dean's Committee
Executive Committee
Department
Departmental Personnel Committee
Associate Dean of the Graduate School and Director of the Ph.D. Program
Associate Dean of the Undergrad. School
Associate Dean for Academic Affairs
Director of the MBA Program
Chairmen of Subject Matter Areas
Chairman of the Center for Research in Management Science
Ph.D. Students
MBA Students
Faculty
Undergraduate Students

EXHIBIT 2

and efficient in avoiding problems in the process of assigning faculty to different courses, since the faculty members belong not to any single school but to the Department and are required to teach courses in both schools.

The Dean and Chairman of the Department

The Dean, as visible head of the two Schools, has a double role. On one hand, he coordinates all external affairs, and on the other hand he manages the Schools. The Dean has a Special Assistant for Government and Business liaison who allocates approximately one-third of his time in the administration of the budget (not the program content) of the Executive Program (an annual program consisting of lectures for business executives with an approximate duration of one month) as well as recruiting the participant companies. The remaining two-thirds of his job is directly related to the Extension Program of Business Administration.

The Advisory Council of the Schools is composed at present of sixteen business executives - mainly Presidents and Chairmen of the Boards - whose nominal role is to provide ideas and suggestions concerning the programs of the Schools. In fact, these men are an important liaison with the business community and often are a source of funds.

The California Business Administration Alumni Association is currently undergoing a transformation which it hopes will result in a more powerful position in the future. Among its present programs, we should mention the Student Loan Program (up to $50,000) and Operation Outreach (suggestions for independent study topics).

One of the Dean's important tasks in internal affairs is the management of the budget. A summary of last year's allocation is given

below. Apart from that there exists an endowment fund which amounts to approximately 5% of the total budget and can be used at the Dean's discretion for general assistance purposes.

TABLE 1

SUMMARY OF BUDGET ALLOCATIONS, 1968-1969

	FTE[a]	$	%
Academic Salaries	86	1,081,893	70.0
Nonacademic Salaries	24	135,080	8.9
General Assistance	3	15,456	1.0
Organized Research	22	147,973	9.5
Maintenance		77,357	5.6
Supplies		87,357	5.6
		1,545,153	100.0

[a] FTE = Full Time Equivalent

It would be most interesting to reclassify these budget expenditures as program costs. This is a very complex task because of the overlaps that exist between activities (research, instruction, public service, etc.).

It is also important to note that the Dean is very much constrained when allocating the budget. In other words, out of the total budget there is only a very small percentage of free funds. An attempt to determine what proportion of the budget is really controllable would have an unquestionable value.

The bulk of the other internal decisions are delegated to the Associate

Dean for Academic Affairs, but the Dean and Department Chairman retain the power of deciding whether to recommend promotions and new hires.

Committees Within the Business Schools

The most important consulting body is the Committee of the Deans or Administrative Committee (the Dean, Associate Deans, and Directors of Programs) which meets regularly every week. The committee discusses all kinds of proposals and changes and decides on the action that should be taken whether final or advisory to the Executive Committee. The Executive Committee is an enlarged body which includes the 5 chairmen of the Subject Matter Areas, and which in turn may either reach a decision or submit the problem to the consideration of the Department.

Traditionally, Department meetings are called whenever a change in the admission policy, a radical change in a program, a creation of a new major, a change in the degree requirements or the inclusion of new courses is considered. Technically, the Department recommends action to the Dean who in principle could choose to act otherwise.

The Departmental Budget and Personnel Committee has a specialized function, and in this sense differs from the previous bodies. Each faculty member keeps his own file and is responsible for having it periodically updated. Copies are kept at the President's, Chancellor's and Dean's offices. The Dean will usually review the files annually to determine who is to be promoted. In the absence of special circumstances, standard rules will be used. In the past, an Assistant Professor was expected to remain about two years at each of the three different salary levels of this rank. The present system has a wider range of steps, but similar rules are used. When

the promotion process is initiated, the Dean appoints a three-member ad-hoc committee to evaluate the file of the person under consideration. The committee then prepares a report which is submitted to the Department Personnel Committee for approval and recommends action to the Dean. The Dean then presents the facts together with his own recommendations - which may or may not agree with the Committee's view - to the Chancellor. If tenure is involved - Associate or Full Professor ranks - a similar process occurs at the campus level before the final decision is made.

The Associate Dean for Academic Affairs and the Subject Matter Areas

The Associate Dean for Academic Affairs acts as deputy to the Dean in all internal affairs - the bulk of which is the coordination of the Chairmen of the Subject Matter Areas.

There are seven Subject Matter Areas (see Exhibit 3) which aggregate faculty members according to their fields of interest. These fields of interest are sometimes broader than the specific fields of emphasis offered to the students. Thus, for example, one Area is Management Science which corresponds to the "student fields" of operations research and operations management. The Chairman of each Subject Area then acts as a communication link between the Associate Dean and the individual faculty members, as well as being responsible for the coordination of efforts within the group. In particular, three main administrative tasks may be identified: (1) proposing to the Dean the course offerings in different quarters and their staffing; (2) proposing to the Associate Dean new hires when a loss has occurred; and (3) initiating the process of adding, deleting or modifying courses or requirements.

Correspondingly, the Associate Dean balances the different proposals to assure that the goals of the entire School, as opposed to the diverse goals

SUBJECT MATTER AREAS

FOR 1970 - 71 ACADEMIC YEAR

1. Accounting
2. Applied Economics
3. Finance and Insurance
4. Legal, Political and Social Environment of Business
5. Management Science
6. Marketing and International Business
7. Organizational Behavior and Industrial Relations

EXHIBIT 3

of the different groups, are achieved. To illustrate the point, consider an imaginary situation. The Subject Matter Chairmen, reflecting the general tendency of the faculty, may propose a staffing pattern in which all senior members teach graduate courses. The undergraduate students then would not be exposed to these senior members to the possible detriment of the quality of their education. Or it may be discovered that a required course is not staffed, in which case an inter-subject-area reallocation would be necessary.

When a vacancy arises in a given Subject Area, problems of reallocation arise. Assume, for instance, that one Area is relatively weak and its chairman is only able to identify several promising but second rate candidates. At the same time a "strong" area which finds it easier to attract people has the opportunity to become even stronger by hiring a first rate "star." Since vacancies do not belong to Areas but to the Department, both actions are equally possible and it is the Associate Dean's responsibility to make the decision. Technically, a vacant position does not even belong to the Department but to the Campus Chancellor. Under an especially tight budget, the Chancellor may therefore allocate the position to any academic department. Moreover, this provides the necessary flexibility to allow the phasing out of a department when it is obsolete, or a rapid rate of growth for a new one.

From an information point of view, the Associate Dean for Academic Affairs serves as the vital link between the Subject Areas and the Associate Deans of the Schools. Assume, for instance, that an area decides not to teach a course for a full year. If the course had been initially required, the Associate Deans of the Schools must be informed to take proper action.

The Associate Deans of the Schools and Directors of Programs

The Associate Dean of the Undergraduate School is at the same time Director of the undergraduate program. His role is therefore to admit and monitor students, to check the fulfillment of degree requirements and in general to manage the program, which means to authorize exceptional student workloads and other special conditions.

The Associate Dean of the Graduate School and Director of the Ph.D. Program performs the same functions with graduate students. A new and important function, however, is present. He distributes a limited number of teaching assistantships and research assistantships among the applicants on a mixed merit-need basis.

To relieve the Associate Dean of part of his workload, the position of the Director of the MBA program was recently created. His task consists mainly of deciding admissions and managing the large, 400 student, MBA program.

The Students

The students are at the bottom of the academic decision structure. Every program - PhD, MBA, MS, and BS - has its own specific curriculum requirements, except for the PhD's at the dissertation level. It is necessary, therefore, that a student enroll with the Registrar's Office of the Berkeley Campus and see an adviser in the School who must approve the set of courses the student has chosen before the study list can be filed. Finally, the student must pre-enroll personally the week before the quarter starts.

A number of student organizations exist, such as the ADSBA (Association of Doctoral Students of Business Administration), the MBAA (The Master

of Business Administration Associates) and the usual honorary fraternities. However, their relation with the formal structure of the School and their impact upon it is extremely limited.

Finally, it is important to mention the Office of Urban Programs, Business Administration Technical Assistant Project (T.A.P.), which is the only organized effort to make the students' managerial skills available to surrounding minority areas.

The Non-Academic Staff

To provide these operations with secretarial assistance, a staff of non-academic people works closely with the academic hierarchy. A Senior Administrative Officer heads the structure. (See Exhibit 4.) She signs requisitions and authorizes supply purchases, as well as changes of status within the nonacademic personnel. Under her, and apart from the Dean's secretary and the General Administration personnel, three main lines of authority emerge. The Graduate Secretary, who assists the Associate Dean of the Graduate School, the Undergraduate Secretary, who has a parallel role, and the Head of the Stenographic Pool.

Research

Research activities are of the utmost importance in all Departments at Berkeley. The Schools of Business Administration are no exception. Each faculty member is expected to devote a substantial amount of his time to do research either on his own (departmental research) or as a part of an organized research effort, such as the Center for Research in Management Science. The Center is a multidisciplinary body whose Chairman must formally report to the Dean of the Schools of Business Administration. A number of similar bodies (see Exhibit 5) draw heavily on the resources of the

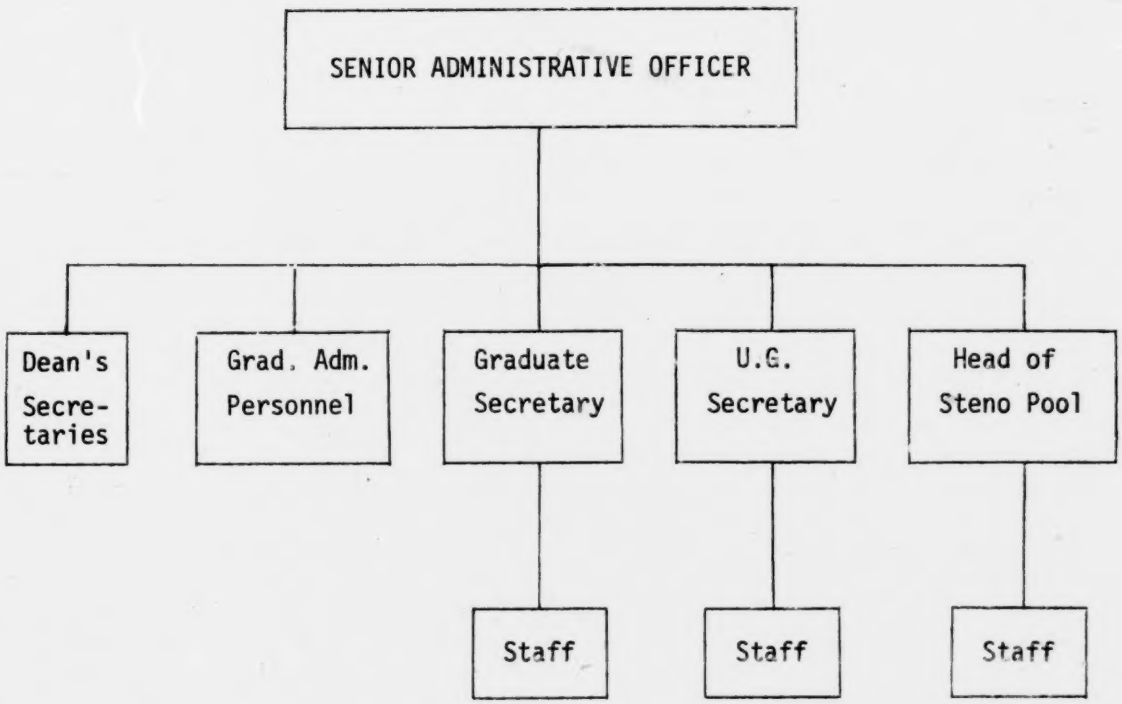

SENIOR ADMINISTRATIVE OFFICER
Dean's Secre-taries
Grad. Adm. Personnel
Graduate Secretary
U.G. Secretary
Head of Steno Pool
Staff
Staff
Staff

EXHIBIT 4

Schools in terms of faculty members and other facilities. From a formal point of view, however, they must report directly to the Chancellor or to the Dean of the Graduate Division.

OTHER ORGANIZED RESEARCH BODIES

1. Institute of Business and Economic Research
2. Center for Research in Real Estate and Urban Economics
3. Institute of Industrial Relations
4. Social Sciences Project, Space Sciences Laboratory

EXHIBIT 5

In the present study, no attempt will be made to deal with the problems posed by research activities. If it is true that their importance cannot be denied, it is also true that a student may not be the most appropriate person to carry out a comprehensive study on his own.

III. A NOTE ON DECISION THEORY AND ITS IMPLICATIONS

A. A Note on Decision Theory[2]

In line with the decision theory developed by Savage, Raiffa and others, we can characterize a school decision maker's resource allocation by the variables chosen and the values assigned to these variables. For a given decision maker - say the Director of the MBA program - and a given activity - say admissions - the set of variables will be called system variables and will be denoted by a vector S. We can dichotomize the variables in S into control variables, u, and state variables, x, $S = \{u_1 \ldots u_m, x_1 \ldots x_p\}$.

A relevant decision system is then defined as the "largest socio-political environment that can be satisfactorily characterized by a given system vector,"[3] The problem is then to insure that one has a complete characterization of the decision system so that it is as small as possible and still retains the essence of the decision problem. Clearly the director of the MBA program will not want to base his admission decision only on the letters of recommendation of an applicant; in fact, he requires much more information. It is important to note that complete characterization depends on the decision maker and the environment of the decision contemplated.

The simplest decision model is when there is no uncertainty as to the consequences of given acts and only one period is considered. The corresponding decision tree can be represented as follows:

---

[2]This discussion, Parts A and B, is based on the work of G. B. Weathersby, "The Allocation of Public Resources: A Decision and Control Theory Analysis," unpublished Ph.D. thesis, Harvard University, 1970.

[3]Ibid.

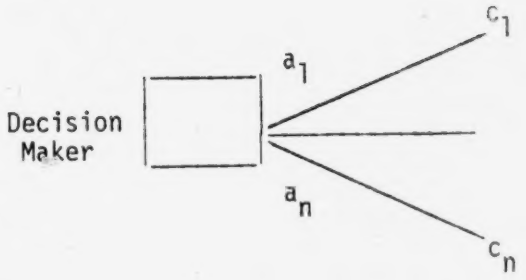


EXHIBIT 6

The decision maker knows the alternatives open to him $(a_1 \ldots a_n)$, and he is certain that the election of one alternative a_i will lead to a given consequence c_i. We could imagine the director of the program considering the admission (a_1) or rejection (a_2) of an applicant. If he admits him, the applicant will obtain an MBA degree from Berkeley (c_1). If he does not, the applicant will obtain the degree from another institution (c_2).

Since it is assumed that the decision maker has a complete characterization S of the system, each c_i must entail a new set of values for S, that is, each consequence may be fully described in terms of x and u. Moreover, in the absence of uncertainty there is a one-to-one relationship between a's and c's which implies that one can determine a unique function such that $f(x, u) = 0$. That is, the level of the control variables determines the values of the state variables.

We still must know something else before we can solve this extremely simple decision problem. We must know the utility that the decision maker assigns to each of the consequences. Then our assumption of utility-maximizing behavior will allow us to determine uniquely the solution to the decision problem.

B. The Role of Information

However, decision problems are much more complicated than what we have previously assumed. Decision makers do not know for certain the outcomes of their acts; consequences of current decisions require other decisions to be made in the future. We can generalise our simple decision tree as follows:

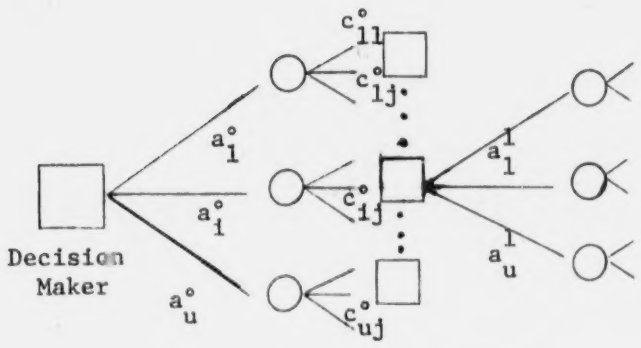


EXHIBIT 7

where act a_i° in period 0 may lead to any of the c_{ij}° consequences with probability p_{ij}°. It is possible to associate a judgmental probability value with each of the consequences c_{ij}° reflecting the decision maker's preference structure. Several strategies can then be used to solve the decision problem. If the decision maker is trying to maximize his utility at period N (a prospective MBA student trying to maximize his starting salary

as a graduate), it is possible to apply Bellman's dynamic programming technique to select the optimal strategy.[4] The decision maker could be concerned instead about the consequences at each decision period and use a minimax strategy, or he may try to maximize each period's expected value of his utility up to the planning horizon.

In any case, as long as uncertainty is present in the decision problem, the decision maker must choose between investing part of his resources in buying information or in output producing activities. This is a complex mathematical problem which we will not discuss here.[5] But it is clear that the role of information in a decision problem is to reduce the uncertainty of the decision process. The cost associated with extra information has to be compared with the expected benefit that the decision maker derives.

C. The Approach of This Study

In line with these concepts, previous work on the subject[6] was directed towards the building of formal mathematical models which could be processed in a computer. The first development was a costing model based on George Weathersby's "A University Cost Simulation Model."[7] It introduces some modifications needed to go from a macro model (University of California) to a micro model (The School of Business). These ideas were presented to and discussed by the Dean's Committee during the Spring of 1970. The intention was to determine what variables were considered relevant, to dicho-

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[4] R. Bellman, Dynamic Programming, Princeton, 1957.

[5] See Raiffa, Howard; and Schlaiffer, D., Applied Statistical Decision Theory, M.I.T. Press, 1968.

[6] L. Llubia, "A Preliminary Analysis of the Schools of Business Administration, University of California, Berkeley," unpublished MBA thesis, University of California, Berkeley.

[7] George B. Weathersby, "The Development and Applications of a University Cost Simulation Model," Office of Analytical Studies, University of California, Berkeley.

tomize them into state and control variables and to define eventually the weights of a criterion function that would replicate the existing resource allocation process.

An operational model would require gathering data and processing the input file in machine readable form. Currently, this type of analysis seems some years ahead of its time, and a more down-to-earth analysis of the Schools has a better chance to be heard.

What the present study retains from the decision theoretic approach is the concept of looking at the organization from the decision maker's point of view. The analysis is not complete, nor is it intended to be. Thus in the next four chapters we review how the schools meet the students' needs. First, the decision of applying for admission to a business school is discussed. Then we switch our perspective to consider the admissions process from the point of view of the director of the program. Chapter VI deals with the establishment of the curriculum and the monitoring of its impact on the students. Chapter VII returns to the student perspective to discuss the advising process.

Clearly, many areas are omitted. In particular it would be most interesting to analyze the impact of the promotion system on the teaching activity. But as with the study of research, this is a delicate subject. The emphasis changes in Chapter VIII, where we try to sketch ways in which consequences of some policy decisions can be assessed. The concluding chapter attempts to summarize the findings and outline proposals for further work.

IV. APPLYING TO THE SCHOOL

The problem of choosing which school to attend may not be as important for undergraduates as it is for graduates. The decision of the undergraduate student is primarily one of choosing the major rather than the school. About 50% of the students joining the program are juniors at the College of Letters and Sciences at Berkeley. (See Chapter VIII and Table 6.) However, some of their decision problems will be touched upon when dealing with graduate students.

Once the holder of a Bachelor's degree has decided to work for a higher degree in business, he must determine which schools he will apply to for admission. Usually the student begins the process by talking to some professors and asking them for advice. The student will undoubtedly carry out some research - catalogues of different schools, some objective reports - and become very sensitive to information related to schools of business.

In a first approximation, we would characterize the prospective Berkeley MBA student as a prestige-of-degree maximizer who is subject to several sorts of constraints which differ from student to student. The constraints may of course reduce the alternatives open to him. About 20% of the new MBA students at Berkeley have BS degrees from the Berkeley School of Business (see Table 7) in which case they can get the MBA in only one year. Clearly, such students have a strong inducement not to consider Harvard, for example, where the cost of the two year program will be much higher.

The prospective PhD student may follow a similar pattern. In his decision, however, the quality and research interests of the faculty members may play a much more important role.

Some Remarks

When the students first contact the Schools, they usually receive an application form and a catalogue which is supposed to be an important source of information. Unfortunately, sometimes the only reliable information in catalogues is that which concerns administrative details such as deadlines for application, requirements, etc. The rest is either irrelevant from a decision point of view, or misleading.

Consider, for instance, this paragraph from the 1969-70 Bulletin of the Graduate School:[8]

> Instruction is offered in small classes with heavy reliance upon the student participation characteristics of seminar methods, and considerable but not exclusive use of the case method.

If we compute the average class sizes for the lecture sections only, we obtain:

TABLE 2: AVERAGE CLASS SIZES

Course Level	Average Number of Students	Range	Number of Courses
Lower Division	37.3	26 - 48	3
Upper Division	23.1	4 - 62	31
"G"	28.2	8 - 52	10
Grad. Courses Lectures	26.7	13 - 39	13
Grad. Courses Seminars	14.2	6 - 23	8
AVERAGE:	25.9	4 - 62	65

If we perform the same computation for the laboratory sections, we obtain:

[8] The 1970-71 Catalogue which came out in August, 1970, has already changed the statement slightly.

TABLE 3: AVERAGE LAB SIZES

Course Level	Average Number of Students	Range	Number of Courses
Lower Division	12.5	8 - 18	2
Upper Division	12.3	10 - 16	8
"G" Courses	18.6	8 - 31	5
Grad. Courses	18.5	11 - 26	2
TOTAL:	15.5	8 - 24	15

It would seem clear that 62 corresponds to a large class and 4 to a small one. It is difficult to ascertain, however, if an average class size of 25.9 can properly be called a "small class."[9] It is also doubtful that instructors can accomplish the type of participation characteristic of the seminars with these class sizes.

Each instructor is free to choose how he wants to conduct the class. In particular, he may decide to use the case method approach, and, indeed, there are some instructors who do so regularly in certain courses. However, there is no such thing as an official policy that encourages the use of the case method approach. On the contrary, if a general feeling exists, it is in the direction of analytical and theoretical presentations as opposed to the case material discussions.

Consider also the statement: "Every effort is made to plan a student's program to meet his career objectives." (page 15 of the Bulletin.)

Clearly, the vagueness of the statement does not allow explicit proof of its validity or invalidity. In Chapter VII, however, we discuss the

[9] However, "As compared with many other public universities and with many other programs in the University of California, Berkeley, these are small classes!" Professor F. E. Balderston, personal communication.

advising process and point out some aspects that would tend to be in disagreement with this statement.[10]

From a decision theory point of view the student should be able to clearly identify the alternatives open to him. This means that relevant information will help him differentiate between alternatives. If we conceive of the student as a prestige-of-degree-maximizer, then the relevant information would be a relevant ranking of the prestige of Berkeley's MBA and Ph.D. students. If he is concerned with research interests, it would be most pertinent for him to have the Schools classified by research areas and approaches. If we view him as a rational investor of time and money, he should be provided with estimates of average student years per degree, realistic figures of cost of living, probabilities of getting given amounts of financial aid, probability of successfully completing his degree and estimates of probable earnings on his first job subsequent to graduation and in his later career.

It may not be the role of the School as such to provide, if it could, all this information. However, it would seem as if the following tasks could be accomplished:

1. Revise the present catalogue to delete any misleading information and reduce to a minimum the not-too-relevant information.
2. Add to the catalogue some relevant information, especially that referring to faculty members. The degrees held and dates, research interests, and prominent publications could be easily added.
3. The catalogue should include clear statements about the percentage of students who do get financial aid through the School and on what criteria, as well as up to date estimates of cost of living.

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[10] There are some other statements in the catalogue of questionable accuracy. Consider, for instance, "There is a wide selection of housing at Berkeley." What kind of information does it try to convey?

4. The Catalogue should also include distributions of ATGSB scores, GPA's, years of work experience, and age of the students presently enrolled together with a geographical distribution of students. Also, a clear statement of the size of the School in terms of numbers of students per program as well as percentages of attrition as a rough estimate of the probability of success. The ratio of applicants to admissions would also be useful as an indication of the degree of selectivity of the School.

5. Applicants could be referred to student organizations such as ADSBA and MBAA for "unofficial" information concerning the programs. This would, of course, require the cooperation of such organizations.

Clearly, these changes could be implemented with very little effort and in a very short time.

In the long run, a thorough study should be undertaken to seek a better understanding of the students who apply, those admitted and the final subset who enroll in the program. The present application form could be expanded to include:

1. Schools the student has applied to.
2. Reasons for selecting them (prestige, quality, cost, perceived chances of being admitted).
3. Reasons for selecting Berkeley.
4. Expectations about the Berkeley program (size of classes, teaching methods, quantitative versus qualitative approach, analytical, etc.).
5. Types of information the student would like to have to make his decision.

Scales would be defined for each item so that easy coding would be possible. The processing of these data would provide a wealth of information regarding the student input in the School.

The philosophy underlying this type of analysis is that a better under-

standing of the role of the School as perceived from the outside will have implications for the internal operations of the School, or at least in the type of information that the Schools provide to their applicants. Assume, for instance, that a survey discovered that almost 90% of the MBA students preferred a practical approach to theoretical discussions with a deep involvement and debate over straight and distant lectures. What would the implications be? The School could change its present approach. Or it could try to convince students that their lifetime interests would be better served if they mastered highly sophisticated mathematical techniques. Or it could redirect its admission procedures so as to select people whose expectations were more in line with the interests of the faculty.

It is difficult to ascertain what are the costs involved in choosing the wrong school. For those students who withdraw from the program because they realize that the School is not what they had expected - whether in terms of program difficulty, general orientation, or whatever - the cost may be extremely high. But it is impossible to measure the human costs in terms of frustration or stress of those students who do complete the program after all. From the point of view of the School, attrition is quite an important problem because, as we point out in the next chapter, it absorbs a fairly large amount of resources and denies entrance to a number of potentially successful candidates.

It seems natural, therefore, that efforts directed to clarifying what the School and its programs are like would have a beneficial effect not only in allowing better student decisions to be made, but also, in transferring part of the burden of the admissions selection from the School committees to the applicants.

V. ADMISSIONS

The Catalogue of the School of Business specifies the admission requirement for the undergraduate curriculum:

> Students transferring from one of the Colleges or Schools of the University must have attained at least junior standing and a grade C average. Students transferring from colleges or schools other than the University of California must have attained at least junior standing and must meet the general admission requirements of the University.[11]

Then the Catalogue indicates specifically what courses are required. It is clear that all students already admitted to the University who meet these requirements will be admitted to the School. The actual admission procedures are therefore limited to those applicants from other institutions. For those, the Office of Admissions determines if they satisfy University requirements. The Associate Dean of the Undergraduate School makes a decision admitting or rejecting the candidate. In some special cases, he may decide to recommend admission to the University of a non-eligible student.

On the other hand, there are many more degrees of freedom in the Graduate School. The Catalogue specifies both procedures and criteria:

> Applicants seeking admission to the Graduate School of Business Administration must make formal application both to the Dean of the Graduate School of Business Administration and to the Dean of the Graduate Division, Berkeley, preferably twelve weeks prior to the opening of the quarter.

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[11] Catalogue of the School of Business Administration, University of California, Berkeley, 1969-70.

> The application for admission to the Graduate Division specifies the deadline dates. The applicant is required to provide the Graduate School of Business Administration a copy of his score on the Admission Test for Graduate Study in Business, given by the Educational Testing Service of Princeton, New Jersey. A separate official record must be presented from each institution previously attended. *Graduate students must also file duplicate transcripts of record with the Dean of the Graduate School of Business Administration.* The graduate application blanks may be obtained by addressing the Dean of the Graduate School of Business Administration, or the Dean of the Graduate Division, University of California, Berkeley, California, 94720.
>
> At the present time, the criteria employed for admission are (1) a superior scholastic record, (2) letters of reference, (3) the objectives of the student, (4) his score on the Admission Test for Graduate Study in Business, and (5) his maturity. In exceptional cases, applicants whose scholastic averages fall below the usual requirements may be recommended for admission on the basis of the other criteria, especially if they have had responsible work experience or show other indications of aptitude and motivation.[12]

As far as the MBA program is concerned, Professor Jack Rogers has developed an elaborate flowchart to serve as a screening device. Those applicants whose GPA is 3.0; who come from "good schools;" whose ATGSB score is over 550 and whose quantitative and qualitative sections are acceptable; and whose letters of recommendation are "satisfactory" are admitted directly. A number of possibilities is then allowed for. A lower GPA but higher ATGSB with "good" letters of recommendation will result in the same decision rectangle. The flowchart is given in Exhibit 8, and its significance and importance cannot be overemphasized.

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[12] Catalogue of the Graduate School of Business Administration, op. cit.

PROFESSOR ROGERS' ADMISSION DECISION CHART

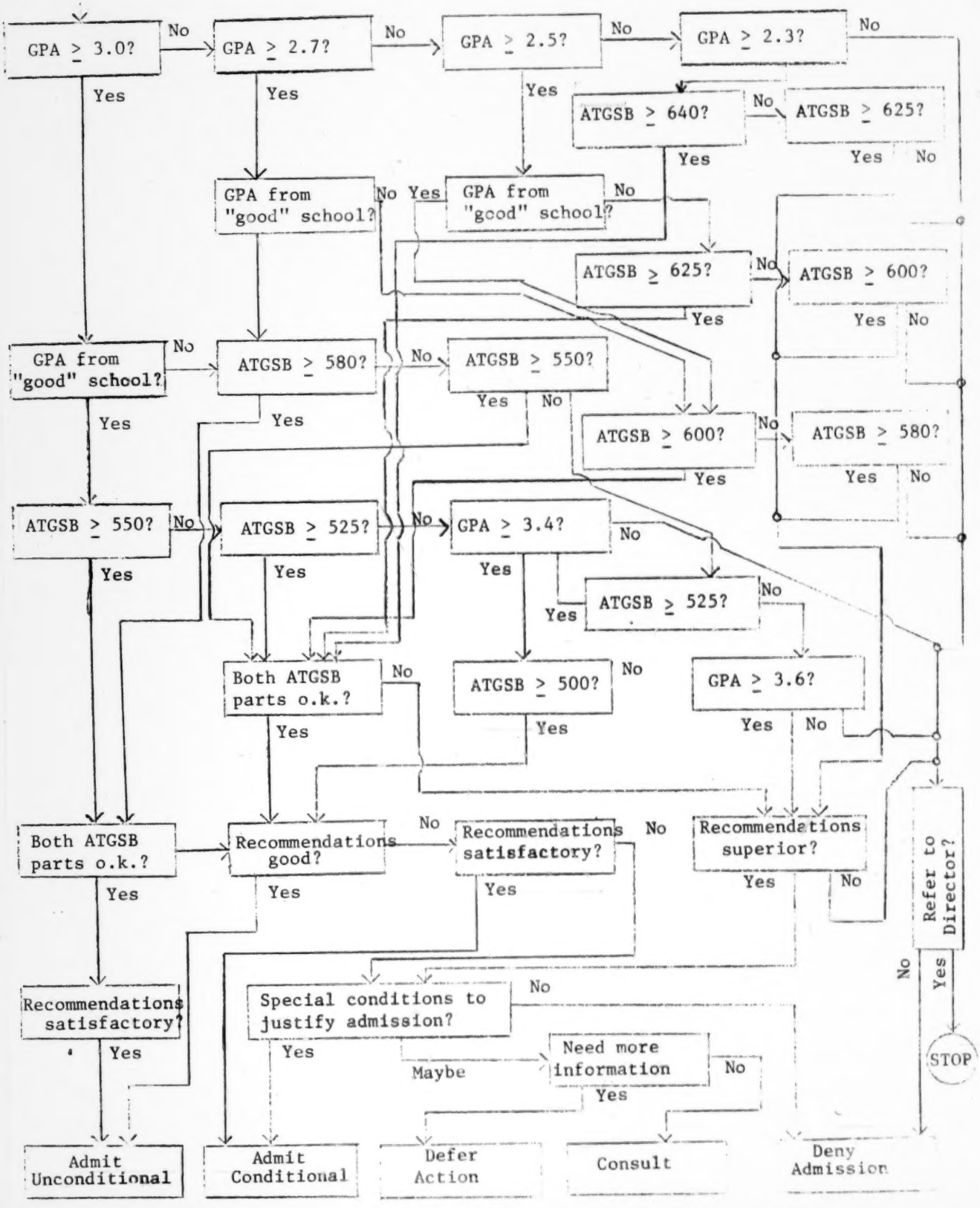

Exhibit 8

In the PhD admissions process, no such screening device exists. The PhD committee which is formed by eight members of the seven subject areas and includes the president of the ADSBA as an ex-officio member, reviews the files. According to the Director of the Program, the criterion for admission is the assessed ability of the applicant to get through the program.

Recently the University imposed an extra constraint on the School. Every program now has a predetermined quota. For graduate students the Dean of the Graduate Division allocates student positions to the different departments up to a ceiling that is determined by the President's Office. Thus, regardless of the number of applicants, the total enrollment is predetermined. A simple calculation (present enrollment minus degree winners and the estimated number of dropouts) will give the number of openings. Admissions must be somewhat higher to account for those students admitted that will not show up. This "percentage of show" was around 73% for the MBA program in 1969.

Some Remarks

The main difficulty in designing an admission scheme lies in defining precisely what the objectives of the selection are. If we accept the present programs as given, it is reasonable to use the ability of the applicants to get through the program as a criterion. However, it is important to note that this is based on a very strong assumption, namely that the programs are so designed as to best serve the goals of the educational process. We will comment on this aspect in Chapter VI.

The most recent and complete analysis of the selection process was carried out by W. C. Pieper, Jr., of the Berkeley Office of Institutional Research in 1969 at the request of former Dean Vance.[13] The purpose of this

[13] "An Analysis of Applicants Admitted to the Master's Program of the Graduate School of Business at Berkeley."

study was "to identify on the basis of past experience those factors which have been the best predictors of a student's ability to succeed in the MBA program."[14] The sample consisted of 432 students who joined the program in the Fall semesters of 1961, 1962 and 1963, and was chosen so that no student in the sample would still be active at the time of study and the sample would not include students who attended under the quarter system (adopted in Berkeley in the Fall of 1967).

Out of the 432 students, only 326 or 75% received an MBA, 39 or 9% were dismissed and 67 or 16% withdrew. The first variable analyzed was citizenship. The success of U.S. students (81%) is close to that of English speaking foreign students (80%), but the non-English speaking foreign students in the sample had a much lower percentage (44%). In fact, 30% of these students were dismissed and the remaining 26% withdrew. The question is then to differentiate those applicants with high potential from the rest within this subset. A series of variables was considered which tends to support the conclusion that those foreign applicants with majors in mathematics, engineering or science, or who have attended U.S. universities as undergraduates or who have been president of one or more organizations have a much higher rate of success (100%, 100% and 86% for the sample).

The second variable analyzed in detail was age at admission. The following table is reproduced from the study.

TABLE 4: STUDENT AGE AND TERMINAL ACTION

Age at Admission	Number of Students					
	Total	Received MBA		Dismissed		Withdrew	
Under 25	235	190	(81%)	19	(8%)	26	(11%)
25 - 29	150	114	(76%)	11	(7%)	25	(17%)
Over 29	47	22	(47%)	9	(19%)	16	(34%)
All students	432	326	(75%)	39	(9%)	67	(16%)

[14] Office of Institutional Research, ibid.

Further analysis indicates that half of those over 29 who withdrew apparently did so in anticipation of an eventual dismissal. Pieper concludes that "the over 29 group not only has a lower probability of earning the degree, but this lower probability can be attributed to an inability to do satisfactory work." This seemingly strange result may indicate the need for a different program designed for this older group.

In subsequent chapters other variables are analyzed in detail: undergraduate background and scores in the ATGSB, in particular.

It is interesting to reproduce part of Pieper's conclusions: "The general sense of the foregoing analysis has been to cast serious doubt on the standard criteria of undergraduate GPA, undergraduate major and ATGSB scores. Where the goal is to increase productivity these factors seem to be irrelevant." He suggests, however, that an increase of 10% in the mean rate of degree production could be achieved through careful screening of citizenship and age, and Exhibit 9 reproduces his final estimates of factors contributing to probability of success.

As Pieper himself suggests, "it would be possible to base an admissions policy on these factors, but this should not be done without further investigation to be certain that they are valid for larger and more current populations." It is necessary, therefore, to undertake a new study which would deal with students attending under the quarter system and extend the boundaries to include PhD students. Either concurrently or as a result of this study, a data processing system could be designed. It should be clearly stated that no computer can replace the work of the Admissions Committees. However, there are at least two factors that lend support to the idea of an automated data processing system; first the rapid increase in the number of applications. From September 1968 to September 1969, 7500

PIEPER'S CONCLUSIONS

A student has a high probability of earning the MBA if he:

- was president of one or more extracurricular organizations.
- received an academic honor or award as an undergraduate.
- was a member of the business honor society.

A student is not likely to earn the MBA if:

- is a citizen of a non-English speaking foreign country.
- was over 29 when admitted.
- attended another graduate institution before applying to Berkeley.
- withdrew from the MBA program previously.
- reports no membership in extracurricular organizations.

An MBA recipient is likely to graduate with a GPA of 3.50 or higher if:

- his undergraduate GPA was 3.50 or above.
- he was a member of the business honor society.
- received one or more scholarships and awards as an undergraduate.

An MBA recipient is unlikely to graduate with a GPA of 3.50 or higher if:

- His ATGSB scores were in the lowest performance range.

EXHIBIT 9

application blanks were mailed out from the Graduate School. From September 1969 to March 1970 (a period of six months), the number was again 7500, representing an increase of 100%. Table 5 below gives the number of applications received for recent Fall quarters.

TABLE 5: APPLICATIONS RECEIVED FOR FALL QUARTERS

	MBA	PhD
1967	-	56
1968	657	88
1969	661	110
1970	1,008*	68**

*By July 1, 1970
**By March 1, 1970

Source: Dorita Crosby, Graduate Secretary, Graduate School of Business Administration, University of California, Berkeley.

As a result of this increase, the workload for secretarial personnel has also increased, especially because the number of non-academic positions depends on the number of students enrolled, a number which has remained relatively stable. To routinize part of the applications-admissions processing would only seem natural under these circumstances. We could consider Professor Rogers' flowchart as a first significant step in this direction.

The second factor is the possibility of continuous and thorough analysis. Analyses such as Pieper's are necessary and important, but they are no substitute for the information systems that a complex organization needs. Clearly, an attrition rate of 25% means that a fourth of the instructional expenditure in the MBA program is essentially wasted and that around 100 positions are denied to potentially successful students. The total cost

involved certainly justifies an important effort towards improvement.

VI. CURRICULUM

The relatively low degree of cohesion of the faculty is a remarkable and significant characteristic of the School with important implications for formulation of the curriculum. At Berkeley, each faculty member is, so to speak, on his own. He may draw on the common pool of resources that the university and the community offer him. But essentially he will have to work his way through alone. This contrasts strongly with some schools where the faculty seems to be some sort of monolithic block, sharing similar views to a much larger extent. This isolation reinforces the theoretical orientation of the Berkeley faculty. In any case, it seems apparent that these elements filter down to the way programs and courses are designed. Programs are analytically oriented with heavy emphasis on theoretical and quantitative methods. It is the student's task to integrate the scattered bits and pieces of knowledge about the program into a coherent body of understanding.

The advantages and disadvantages of this philosophy are debatable. From a managerial point of view, it would seem logical to insure that no misunderstanding exists when a new faculty member or a new student comes to the School, as is partly discussed in Chapter IV, and second that this philosophy not be a deterrent to good planning and control.

Presently, as pointed out in Chapter II, processes of change relating to courses are initiated at the level of Subject Matter Areas. If it is apparent that a problem exists - such as the separation of FORTRAN instruction from the introductory accounting courses - meetings will be held and proposals will be discussed until agreement is reached. The Area chairman will then bring the proposal to the Associate Dean for

Academic Affairs who in turn will include the subject in the agenda of the Executive Committee and the Department. In most cases, the Department will have to vote on the proposal if it is to be implemented.

There is another mechanism that can be used to introduce a new course at the graduate level. This is through the rubric of Special Topics in Business Administration - courses for which Academic Senate approval is not required. Often faculty members use this channel as an experimentation device, either to test out a new idea that will eventually crystallize into a regular course or to fulfill the interests of a group of graduate students.

Three lines of improvement may be considered. First, at a very practical level, an effort should be made to coordinate and balance the curriculum; often topics such as linear programming are covered in several courses - basic mathematics, basic economics, production management, etc. This may result in a considerable waste of time on the part of those students whose knowledge of the topic is good and also on the part of those whose knowledge is bad, because the topic will be covered superficially enough to support the subsequent material with the end result that neither the basic nor the advanced material is understood.

It would seem necessary, therefore, to have a Curriculum Committee whose specialized function would be to balance and coordinate topics to be covered by each course and establish sequences in which courses should be taken. It is important to note that the Executive Committee -- composed of the Deans and the chairmen of the Subject Matter Areas - does not have this role either on paper or in practice. In the Faculty Manual it is clearly stated that "the large size and diversity of the Department requires that some smaller body be constituted to handle routine activities on a continuing basis. The specific function of the Executive Committee is to

coordinate Group and School activities and to recommend policy actions to the Dean and/or Faculty as relevant."[15] It is apparent, therefore, that this is a general purpose committee, not a specialized one. In fact, an effort along the lines suggested above took place on the Planning and Policy Committee chaired by Professor Bill Roberts, without apparent success.

Secondly, one may consider the possibility of designing a feedback system to provide actual information on the "performance" of these programs. The difficulty here lies in determining whose feedback should be considered; That of the students presently enrolled? That from those graduating? Alumni? Employers? It is frequently argued that the real problem with obtaining feedback is that the Schools of Business prepare people not for the task they will be doing immediately after graduation, but for the job they will have five years or more after graduation. One can respond, however, that if "prepare" means to give the student a set of tools, the argument makes no sense because if the tools are not used for five years they will be forgotten. On the other hand, if "prepare" has a broader meaning which includes the teaching of a way of looking at things, such as the development of certain analytical skills, then it is clear that the benefits will accrue immediately, and will certainly extend over the life of the individual. Our present concern, however, is not the determination of real costs and real benefits, but only the possibility of having some sort of structured feedback. This should be obtained from all sources indicated above.

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[15] Schools of Business Administration, University of California, Berkeley, Faculty Manual, 1969-70.

Thus, all students finishing a course should be required not only to evaluate the instructor but also the material of the course and define its relevance in the light of their own experience. In this direction it is very encouraging to view Dean Goshay's effort to get feedback from the students. He has designed a questionnaire which is to be filled in by all students at the end of each quarter. At the present time - the project is still in an experimental stage - data are punched in cards and processed by computer to give a distribution of evaluations. Professor Goshay intends to refine the questionnaire and possibly leave its operation to the students. Its importance cannot be overemphasized - it will have a strong impact on advising; it will probably be used to assess teaching quality for promotional purposes; and it represents the most recent and complete attempt to structure and organize a feedback system.

It is important, too, to obtain evaluations of the program as a whole. Students just before graduation are in a good position to provide these data. The Curriculum Committee could therefore design a questionnaire and manage its administration. This would allow for the possibility of enlarging the questionnaire to include specific items related to current problems or decisions. Needless to say, this is the last chance the School has to get information from all its students.

The difficulties with getting data from alumni and employers are that surveys can be neither exhaustive nor random. Unfortunately, the School loses control over students as soon as they graduate. Surveys among only those who do remain in touch with the School may introduce bias.

Thirdly, rather than trying to rationalize and refine present operations, one could question the underlying managerial assumptions. Thus, Carl Goldman, President of the ADSBA, has stated: "The structure of our

current process is a massive waste of talent at best and has many harmful aspects at worst. The humdrum repetitive cycle of lecture-homework-test-grade repeated every ten weeks dulls the student's creativity, causes him anxiety, establishes a precedent for artificial and grossly insufficient evaluation, neither allows the time nor provides the motivation for original and integrative thought, establishes elements of an adversary relationship between student and instructor, and in general treats the student as an article of manufacture - and those are its good points."[16]

Many students and some faculty members would agree. It is possible that some would like to rephrase some sentences either to accentuate or to dampen its radicalism. But certainly, the point is well taken. The problem is one of finding alternatives which would allow "students to self-actualize, relate their studies to their lives [and] regain the excitement inherent in education."[17] Unfortunately, the topic falls outside the scope of the present study.

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[16]Carl Goldman, "An Alternative Educational Concept," a short proposal written up as part of the reconstitution work undertaken as a consequence of the reaction that took place on campus when President Nixon decided to invade Cambodia in May, 1970.

[17]Ibid.

VII. COURSE OFFERING AND ADVISING

Towards the end of each quarter, the new Schedule and Directory is published. This specifies the complete list of courses offered in different departments throughout the campus, together with the times, places and instructors. Each student is supposed to get acquainted with the possibilities open to him and work out a schedule in consultation with his adviser. In theory, the adviser's role is to design for the student as meaningful a program as possible; that is, to discover the student's weak areas, and interests and, utilizing his knowledge about course offering and instructors, help the student to obtain a well-rounded education. We could call this the academic role. Advisers also have an administrative role: to insure that the students comply with the rules established by the Graduate Division and the School, and to approve the set of courses the student will take. Without this approval, the student cannot file his study list.

"All members of the Department with regular teaching assignments are expected to participate in advising during their quarters of teaching duty."[18] Each quarter the two Associate Deans request that several faculty members be available for advising in each student field. This is done the week before the classes begin and the first week of classes.

In order to insure that class sizes are kept reasonably small, and in line with room capacities, there is a pre-enrollment system to obtain early information about the student's plans. Previously, only multiple section courses had pre-enrollment, but since the Spring quarter of 1970, any stu-

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[18] Faculty Manual, op. cit.

dent planning to take a course in the Department is required to pre-enroll the last week of the previous quarter. The student hands in one prepunched IBM card per course with his name and status (graduate or undergraduate) that he obtained from the Registrar upon registration. The cards are processed by a computer which prints out class lists and summary information so that the Deans can take action to make supply match demand. The first three to four days of classes, Teaching Assistants hold special hours to make changes possible. Changes take place because the student may have changed his mind or because new sections may have been added (or old ones cancelled).

Some Remarks

This pre-enrollment system has been backed by Dean Anton and has accomplished in its first quarter of operations a 98% level of satisfaction. That is, only 2% of the students could not enroll in all of their chosen courses. The effort is completely in line with what this paper is suggesting. Hopefully, the extremely satisfactory level of achievement of this project will encourage similar work in the other areas.

Proper advice is not an easy task to perform. It requires accurate and up-to-date information on course offerings as well as knowledge of the School and University regulations. It also requires a good understanding of student problems and interests. If the adviser is unable to gather the necessary information, he will tend to become, at best, a pure administrator, whose role is simply writing down the student's proposed set of courses so that he can file his study list. This is not advising. At worst, he may mislead the students into taking unnecessary courses, or, failing to recognize the student's practical orientation, he may induce him to do highly theoretical work.

There are several possible modifications which should be seriously considered. First, a very brief summary of relevant regulations concerning advising could be prepared and promulgated every quarter if necessary. This should be a kind of checklist reminder for advisers which would emphasize likely sources of conflict. For instance, an MBA student took the first course of a sequence without intention of taking the second part of it with consent and encouragement from his adviser who did not point out that unless special arrangements were made with the instructor, an IP (In-Progress) grade would be given to the Registrar's office regardless of what letter grade the instructor assigned him. He found out about it by pure chance when the second part of the course was over and the instructor away on vacation. Apart from the trouble that *ex-post* arrangements imply, the IP grade would have been converted to an F had he not discovered it. Clearly, it may be argued that it is the student's responsibility to make certain that everything is in order. Nevertheless, it would seem only natural that advisers should be aware of the possibility of such conflicts and warn students about the consequences.

Second, it would seem reasonable for a student to have the same adviser throughout the program. In this way, the adviser could have a much better knowledge about what the student has done, his current progress, etc. Of course this introduces a rigidity into the system that could have some bad consequences. To avoid any personality conflicts between student and adviser, students could be allowed to change their advisers at least once without explanation or administrative approval.

Finally, it would be very helpful if the reading list and course descriptions that instructors usually do not hand out until the first day of classes were made available in advance at least to advisers and preferably

to students for general consultation. This would provide advisers with better information about courses and about instructors' approaches, thereby enabling the student to make better assessment of their suitability for his program. On the students' part, the information would allow better planning in terms of balancing the amount of work in a given quarter - a course with five papers need not be taken concurrently with a course with a homework set per lecture and another with 1000 pages of required reading material.

Dean Goshay's evaluation program will fit very nicely here. At present the only sources of information about instructors' approaches consist of a set of files kept in the Graduate Students' Lounge and informal contacts between students. But when the evaluation forms are operational and the results are available, students and advisers will be able to make more rational decisions.

There is still another reason in support of increasing the amount of information for the advising process. Assume, for instance, that the lack of perfect information on the topics covered by courses induces advisers to ask new students to take one unnecessary course. Roughly this would apply to the new admissions to the undergraduate program, say 160 students, and to about 80% of new admissions in the MBA program, say another 160. The remaining 20% consists of transfers from the undergraduate school (see Chapter VIII) who presumably are better acquainted with the school. PhD students are also excluded on the basis that they usually have more freedom to determine what courses they will take. The average class size (Table 2) in upper division courses is 23.1 and in the "G" courses 28.2. This means that $\frac{160}{23.1} + \frac{160}{28.2} = 12.5$ courses would be taken up. At roughly four courses per faculty FTE we have three FTE's for that quarter. The average salary

rate is $15,793 for a nine month appointment which means that the cost of misadvising would come up to $15,793 per quarter. The calculation, needless to say, is extremely rough, but it gives an idea of the order of magnitude of the costs which may be involved.

VIII. SOME POLICY QUESTIONS

A. Interdependencies

In this chapter we will deal with the interdependencies among the programs in the schools as well as with the links between the schools and the rest of the campus.

Exhibit 10 attempts to display the interrelation between outputs and inputs of the programs in terms of the number of students.

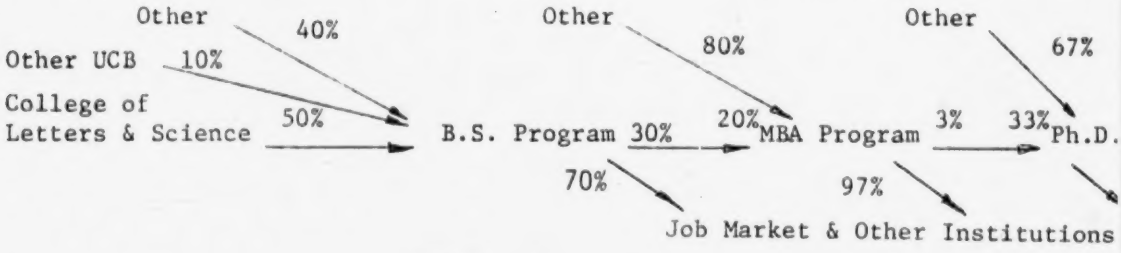

EXHIBIT 10

About 50% (see Table 6) of the student input in the undergraduate school comes from the College of Letters and Sciences. A total of 60% have junior standing in the Berkeley campus. Out of the total number of graduates in a given year around 30% go on to the Graduate School of Business Administration in Berkeley. This represents 20% of the student input in the MBA program. Similarly, around 3% of the MBA graduates continue into the PhD program, constituting around a third of the total input in the program.

A second aspect of dependency among programs is given by the percentage

TABLE 6

ADMISSIONS TO THE SCHOOL OF BUSINESS ADMINISTRATION

	1966-67	1967-68	1968-69	Fall 1969	Winter 1970
Admitted and Registered					
College of Letters & Sciences	177 (53.6%)	157 (50.3%)	162 (46.9%)	89	38
Other UCB	40 (12.1%)	28 (9.0%)	21 (6.0%)	11	4
Other	113 (34.3%)	127 (40.7%)	163 (47.1%)	60	17
Total:	330 (100.0%)	312 (100.0%)	346 (100.0%)	160	59
Admitted - not Registered	58	67	80	11	5
Denied	7	1	30	11	18

Source: Departmental statistics provided by Miss E. Winslow.

TABLE 7: BS - MBA TRANSFERS

	1966-67		1967-68	
Degrees Granted - BS	283	(100%)	247	(100%)
To Graduate School of Business Administration	73	(26%)	86	(35%)
Admitted and Registered in MBA program	372	(100%)	430	(100%)
From Undergraduate School	73	(19%)	86	(20%)

Source: Departmental statistics provided by Miss E. Winslow.

TABLE 8: MBA - PhD Transfers

	Fall 1969		Fall 1970*	
Admitted and Registered in Ph.D. program	18	(100%)	22	(100%)
From the School of Business Administration MBA program	6	(33%)	7	(31%)

*Expected to enroll.

Source: Departmental statistics provided by Mrs. R. Minor.

of student credit hours (SCH) that, say, undergraduates took outside their school. The data for Fall 1967 are summarized in the following table.

TABLE 9

STUDENT CREDIT HOURS TAKEN BY BUSINESS ADMINISTRATION STUDENTS

	BS Students		MBA's		Ph.D.'s	
	SCH	%	SCH	%	SCH	%
Undergraduate courses in Business Administration	4,442	62.3%	3,088	52.8%	41	4.7%
Graduate courses in Business Administration	0	0.0%	2,061	35.1%	453	52.0%
Courses in other Departments	2,688	37.7%	708	12.1%	378	43.4%
TOTAL:	7,130	100.0%	5,857	100.0%	872	100.0%

	Total	
	SCH	%
Undergraduate Courses in Business Administration	7,571	54.6%
Graduate courses in Business Administration	2,514	18.1%
Courses in other Departments	3,774	27.3%
TOTAL:	13,859	100.0%

To the extent that these figures are representative of a typical quarter, we may see that the MBA students rely heavily on the undergraduate courses (53%). However, this is due to the fact that "G" courses were in-

cluded in the undergraduate level. Graduate courses are numbered in the two hundred series, whereas the "G" courses are numbered in the same way as the upper division undergraduate courses, that is, in the one hundred series. The only distinction is that their numbers are followed by a G. The computer, therefore, classifies them as undergraduate and it would be quite difficult to separate the credit hours in "G" courses from the purely undergraduate courses, but it would seem logical to assume that most of the 3,088 SCH are accounted for "G" type of work. If this is true, the MBA program should be considered as the most independent of the three, followed by the BS and PhD programs, respectively. But clearly this conclusion is tentative.

In the Fall of 1967, Business Administration students accounted for a total of 13,859 SCH whereas the Business Administration department provided a total of 12,461 SCH. The schools were, so to speak, net importers of 1,398 SCH. The break-downs are as follows:

TABLE 10: STUDENT CREDIT HOURS-BUSINESS ADMINISTRATION COURSES TAKEN BY:

	Undergraduate Students	Master's	PhD	Total
All UCB Students	6,467	5,410	584	12,461
Bus. Ad. Students	4,442	5,149	494	10,085
To students from other departments	2,025	261	90	2,376

TABLE 11: STUDENT CREDIT HOURS-BUSINESS ADMINISTRATION STUDENTS TOOK COURSES IN:

	Undergraduate Students	Master's	PhD	Total
All Departments	7,130	5,857	872	13,859
Business School	4,442	5,149	494	10,085
From other Departments	2,688	708	378	3,774

We can also group the SCH to obtain the exports and imports that belong to each school.

TABLE 12: STUDENT CREDIT HOURS-NET IMPORTS

	Undergraduate School	Graduate School	Total
Imports	2,688	1,086	3,774
Exports	2,221	155	2,376
Net Imports	467	941	1,398

A further analysis of this data reveals that the range of exports of the undergraduate school is widely distributed: 61.9% of the 155 SCH that the graduate school exported were accounted for graduate students in engineering (18.0%), social sciences (15.5%), and environmental design (28.4%). Both Schools are therefore very much dependent on other departments, but it is clear that the Undergraduate School "pays out" a fairer price for what it gets.

B. Phasing out the Undergraduate School

The idea of closing the Undergraduate School has been discussed several times at the Board of Regents. The question we propose to analyze here is how many resources the phasing out of the BS program would liberate and how they could be reallocated. With respect to instruction which has been our focal point throughout this discussion, we would need to consider the number of faculty FTE's that could be reallocated. To do that and still using the data for the Fall of 1967, we first consider the distribution of instruction loads between the Schools.

TABLE 13: STUDENT CREDIT HOUR-INSTRUCTIONAL EFFORT PER SCHOOL

	Undergraduate School	%	Graduate School	%	Both	%
Exports to other Departments	2,221	23%	155	6%	2,376	19%
Undergraduate Bus. Adm. Students	4,442	45%	0	0	4,442	36%
Graduate Business Adm. Students	3,129	32%	2,514	94%	5,643	45%
TOTALS:	9,792	100%	2,669	100%	12,467	100%

It is interesting to note that the BS students absorb less than half of the total instructional effort made by the Undergraduate School as measured by SCH. If it was considered necessary to provide the same level of service to other departments and fulfill the needs of graduate students, only 4,442 SCH would be liberated or 45% of the total.

The Institutional Studies statistics record the weekly contact hours (WCH) per school. The WCH are defined as the sum of the number of hours an instructor spends weekly in class meetings with students. A summary for the Fall of 1967 is given in Table 14.

If we assume that a linear relationship exists between SCH and faculty WCH which implies an even distribution of class sizes and units of credit, then 45% of 266.5 or 199.5 WCH would no longer be needed. The Faculty Effort and Output Study[19] gives an average of 8.5 WCH/faculty FTE which coincides with the number we obtain if we divide the total number of faculty WCH (419.0) by the number of faculty FTE's (49.02). This implies that 14.0 fac-

[19] Faculty Effort and Output Study, Office of the Vice President - Planning and Analysis, Office of Analytical Studies, University of California, Berkeley, January, 1970.

TABLE 14: WEEKLY CONTACT HOURS SUMMARY - FALL 1967

	All Ranks	TA's and Associates	Faculty
Lower Division	70.5	67.5	3.0
Upper Division	216.0	52.5	363.5
Undergraduate School:	386.5	120.0	266.5
Graduate School:	157.0	4.5	152.5
TOTAL:	543.5	124.5	419.0

ulty FTE's could be reallocated. This is under the assumption that the Graduate School would continue to offer some undergraduate courses, as a service to other departments and to its own students. If this were not true and no undergraduate courses were offered at all except for the ones needed by graduate students, 77.0% or the 266.5 WCH would be freed, or 24 FTE's.

It is important to emphasize that this would represent a considerable loss in terms of Teaching Assistantships and Associateships. As indicated by Table 14, Associates (usually PhD students at the dissertation stage) teach the lower division courses thereby aequiring some teaching experience before they obtain the degree.

Three general ways to reallocate released resources can be suggested. First, the size of the graduate programs could be held at approximately the same level and class sizes reduced so as to avoid average class sizes of 28.2, 26.7 and 14.2 for "G" courses, lectures and seminars respectively, as discussed in Chapter IV (see Table 2). This would probably encounter strong

opposition in the Graduate Division at a time when the budgets are being cut. A second alternative, would be to increase the size of the graduate programs. Here it should be noted that the MBA program puts a smaller burden on the rest of the campus than does the PhD program. Moreover, the professional orientation of the MBA's does not require that they have teaching experience. Therefore, if the increase of the MBA program size were much higher than that of the PhD program, a balance could be struck wherein all faculty resources were absorbed and the new needs for TA's and Associates compensated in part for the absence of the BS program. As a third line of action, special programs could be developed. The Business School is in an excellent position relative to some other departments, to offer programs to the business community. We could also include all kinds of experimentation with new ways of teaching, etc.

C. Distribution of Teaching Loads

There are several ways to analyze the teaching loads shared by different faculty ranks. Based on the Institutional Studies statistics, it is possible to compute (see Tables 15 and 16) the percentages of Weekly Student Hours (WSH) and Weekly Contact Hours (WCH) taught by different ranks at different levels. It should be noted that those data treat "G" courses as undergraduate courses, thereby biasing the percentages in favor of undergraduate instruction. This will be clear when analyzing the same phenomenon more directly.

Despite this fact, it can be seen that the proportion of graduate courses taught by senior faculty is higher than that of undergraduate courses. In terms of WSH this is around 65% as compared to 40%. Moreover, this percentage is increasing with time for graduate courses (64.2, 66.9, and 71.8)

TABLE 15: WEEKLY STUDENT HOURS, SCHOOLS OF BUSINESS ADMINISTRATION

UNIVERSITY OF CALIFORNIA, BERKELEY

	Professor	Assoc. Professor	*Subtotal*	Assist. Prof. & Lecturer & Instructor	Associates	*Subtotal*	TOTAL
Fall 1966							
UG	2149	7000		3727	632		8,508
%	25.2	23.5	47.8	43.8	7.4	51.2	99.9
Grad	958	230		660	0		1,848
%	51.8	12.4	64.2	35.7	0	35.7	99.9
Total per Rank	3107	2230		4387	632		10,356
Fall 1967							
UG	1557	1608		4020	792		7,977
%	19.5	20.1	39.6	50.3	9.9	60.2	99.8
Grad	886	376		623	0		1,885
%	47.0	19.9	66.9	33.0	0	33.0	99.9
Total per Rank	2443	1984		4643	792		9,862
Fall 1968							
UG	1569	1082		3574	876		7,101
%	77.0	15.2	37.2	50.3	12.3	62.6	99.8
Grad	940	504		534	30		2,008
%	46.8	25.0	71.8	26.5	1.4	27.9	99.7
Total per Rank	2509	1586		4108	906		9,109

TABLE 16: WEEKLY CONTACT HOURS, SCHOOLS OF BUSINESS ADMINISTRATION, UNIVERSITY OF CALIFORNIA, BERKELEY

	Professor	Assoc. Professor	*Subtotal*	Assist. Prof. & Lecturer & Instructor	Associates	*Subtotal*	TOTAL
Fall 1966							
UG	94.3	68.8		119.3	19.0		301.4
%	31.2	22.8	54.0	39.5	6.3	45.8	99.8
Grad	72.7	20.0		51.0	0		143.7
%	50.5	13.9	64.4	35.4	0	35.4	99.8
Total per Rank	167.0	88.8		170.3	19.0		445.1
Fall 1967							
UG	66.7	52.8		147.0	28.5		295.0
%	22.6	17.9	40.5	49.8	9.6	59.4	99.9
Grad	70.7	44.3		37.5	0		152.5
%	46.3	29.0	75.3	24.5	0	24.5	99.8
Total per Rank	137.4	97.1		184.5	28.5		447.5
Fall 1968							
UG	56.3	42.6		136.1	33.0		268.0
%	21.0	15.8	36.8	50.7	17.3	63.0	99.8
Grad	81.5	39.5		38.0	1.5		160.5
%	50.7	24.6	75.3	23.6	0.9	24.5	99.8
Total per Rank	137.8	82.1		174.1	34.5		428.5

and decreasing for undergraduate courses (48.7, 39.6, and 37.2). The same type of trend is obtained when considering the WCH. This implies that, in fact, undergraduate students are less exposed to senior faculty than to graduate students because senior faculty teach fewer undergraduate courses.

Another interesting phenomenon shown in Table 16 is the trend to teach more graduate courses (WCH:143.7, 152.5 and 160.5) and less undergraduate courses (WCH:301.4, 295.0 and 268.0).

If we consider now the data obtained by a simple count of section meetings as given in the Schedule and Directory of the Spring Quarter of 1970, the differences become clearer.

TABLE 17: NUMBER OF SECTION MEETINGS TAUGHT BY FACULTY OF DIFFERENT RANKS, SPRING 1970

Faculty Rank	UG Courses			Grad Courses (including "G" courses)			TOTAL	
		%	%		%	%		
Professor	12	28.5	(31.5)*	26	44.8	(68.5)	38	(100)
Assoc. Prof.	6	14.3	(28.5)	15	25.8	(71.5)	21	(100)
Asst. Prof., Instructor & Lecturer	16	38.1	(48.4)	17	29.4	(51.6)	33	(100)
Associates	8	19.0	(100.0)	0	0.0	(0.0)	8	(100)
TOTAL	42	100.0		58	100.0		100	

*Numbers in parentheses refer to "horizontal" percentages.

We can see that 43.9% and 70.6% of the section meetings were held by senior faculty at the undergraduate and graduate levels, which does not contradict the previous results. However, when we include the "G" courses in the graduate section, we can see that there are 16 more meetings at the gra-

duate level (58 meetings at the graduate level, 42 at the undergraduate level). Moreover, if we look at the distribution of loads at a given rank, senior faculty teach more than twice as many graduate courses than undergraduate courses, whereas junior faculty (excluding associates) are distributed in approximately equal shares.

If we tried to pose the question of a fair distribution, it would be necessary to define first whom are we going to be fair to. From a student's point of view, the relevant variable to consider would be WSH, but computer in a way that would exclude the "G" courses. From a faculty perspective, what is relevant is the number of WCH spent with students at the two levels. Using the data of Table 16, we find:

TABLE 18: WEEKLY CONTACT HOURS TAUGHT BY FULL PROFESSORS

Course Level	Fall 1966		Fall 1967		Fall 1968	
UG	94.3	56.4%	66.7	48.5%	56.3	40.8%
Graduate	72.7	43.6%	70.7	51.5%	81.5	59.2%
TOTAL	167.0	100.0%	137.4	100.0%	137.8	100.0%

This shows that professors' share of undergraduate courses was more than half (56.4%) in the Fall of 1966, but became less than half (40.8%) in the Fall of 1968.

One might argue that this is due to the changing proportions of full professors to total Business Administration faculty on duty in these quarters. Table 19 shows the results of a headcount of faculty members.

Indeed, it is true that these percentages changed. However, the lack

TABLE 19: TOTAL BUSINESS ADMINISTRATION FACULTY ON DUTY

	Fall 1966		Fall 1967		Fall 1968	
Full Professors on duty	21	31.3%	24	31.3%	17	25.3%
Total number of Instructors on duty	67	100.0%	63	100.0%	67	100.0%

Source: Based on departmental statistics provided by Miss E. Winslow.

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of a trend seems to confirm that when adjusting for the "G" courses, senior faculty teach a higher proportion of graduate courses, and in any event, the proportion of graduate courses taught by senior faculty is higher than the proportion of undergraduate courses.

IX. SUMMARY AND CONCLUSIONS

This paper has tried to point out certain areas of the management of the instructional process of the Business Schools at the University of California, Berkeley, where some improvement seems feasible.

We have discussed the necessity to measure the quantity and the quality of information that the School provides to its prospective students. In particular, we advocate more operational statements as opposed to vague descriptions, and outline a way to keep up with the changing information needs through a systematic analysis of the expectations of applicants. The cost to the student of choosing the wrong school seems beyond quantitative treatment. From the point of view of the School, however, the problem is related to attrition rates and admission policies, which seems to justify an effort in clarifying what the School and its programs are like.

The admissions criteria play a vital role in the Graduate School. The selection process is intended to ensure that the applicants will be able to get through the programs, or, in other words, to ensure that a minimum attrition rate exists. The results of Pieper's analysis with MBA students, however, seem to indicate that the classical predictors - such as GPA and ATGSB scores - give a very poor indication of the candidate's success and conclude tentatively that a better choice of predictors would decrease the attrition rate ten percentage points. We advocate, therefore, a validation of these results and suggest that because of the increasing trend in applications and the changing nature of the programs, a computerized information system be built. This would have the double task of carrying Professor Rogers' flowchart a step further to simplify the admissions clerical work and to build a computerized

data base that would allow the directors of programs to perform a periodic analysis of the validity of the predictors used. We did not attempt to convert the 25% attrition rate of Pieper's sample into a dollar figure, but it seems clear that if a fourth of the instructional effort is, so to speak, wasted, there is a wide margin for improvement.

Our discussion of the curriculum pointed out that there seems to be little cohesiveness among the faculty members and that this was reflected in the way the curriculum is designed. It is the student's task to integrate the bits of knowledge given to him in the programs into a coherent body of understanding. We suggest that whatever the merits of such a philosophy, an effort should be made to avoid the duplication of material in several courses. The logical group to perform such a task is a Curriculum Committee. It is again difficult to estimate to what extent this repetition occurs and its implications in terms of wasted weekly contact hours. Probably the only way to find out is from a direct survey among the students. In this direction we emphasize the importance of Dean Goshay's evaluation program and indicate that it could be easily expanded to obtain this information. We also stress the impact that the project will have in other areas and in particular, the advising process. The need for feedback, however, does not stop at the course level. We indicate that the curriculum committee could carry out a survey among the students right before graduation to obtain the student's responses to the total program design.

We also discussed the advising process and emphasized the importance of providing advisers and students with good information on the course content and general approach. We recommend that instructors make available the usual course outline and reading list for use during the advising week on the basis that this would contribute to the formulation of more rational decisions. In the same line, we suggest that a summary of relevant regulations be given to

advisers so that administrative problems could be easily avoided. Moreover we mentioned the eventual desirability of maintaining the same adviser and student. We noted that the costs of misadvising can be considerable. If every new student is misadvised and takes one unnecessary course, the amount of instruction salaries that is wasted amounts to about $15,000 per quarter. The situation depicted may seem exaggerated, but in any event, it gives us an estimate of the order of magnitude of the costs involved.

We then switched our perspective to consider some policy problems from a managerial point of view. We analyzed the interdependencies among the degree programs to build some background for the next topics. We considered first the consequences of phasing out the undergraduate school, and estimated that some 14 to 24 faculty FTE's would need reallocation. We suggested some general directions for the use of these resources.

The second question considered is the fairness of the teaching loads distribution by rank and by level of courses taught, and we concluded that different variables had to be used to assess different kinds of fairness.

It can be seen that there are many areas where further work is needed. In addition to those that have been underlined above, we could add the need for a general organization of the data that exists, and the statistics that the Schools keep. That would have the great advantage of simplifying many areas of analysis and allowing for more refined measurement.

Finally, let us point out that to encourage students to look into the problems of the School might not be a bad idea!